

IN THE CLAIMS

Please amend the claims as follows.

CLAIM OR CLAIMS

I claim:

1. (Canceled) A method of computing an error bound that indicates how well a nonbinary hypothesis function approximates a nonbinary target function, the method comprising:

forming an optimization problem in which error bounds for some basis functions and outputs of the basis functions over a set of out-of-sample inputs are used to form a set of constraints on the outputs of the target function over the out-of-sample inputs and in which the objective is to bound the average over the set of out-of-sample inputs of an error function based on hypothesis function outputs and target function outputs, subject to the constraints on the target function outputs

and solving the optimization problem to produce a hypothesis function error bound.

2. (Canceled) The method of claim 1, implemented using a general purpose computer.

3. (Canceled) The method of claim 1, where the optimization problem is an integer linear program.

4. (Canceled) The method of claim 1, where the optimization problem is a linear program.

5. (Canceled) The method of claim 1, where the hypothesis function is developed by applying fusion to the basis functions.

6. (Canceled) The method of claim 1, with additional constraints derived by validating lower bounds on out-of-sample error.

7. (Canceled) The method of claim 1, with additional constraints derived by validating the frequency distribution of the target function output.

8. (New) A method for producing in a computer system an error bound for a hypothesis function, comprising:

forming a set of variables comprising a variable corresponding to each combination of an input in a set of inputs and a partition in a partitioning of the range of a target function on the input;

forming a set of constraints on the values of the variables, comprising a constraint corresponding to each basis function in a set of basis functions, constraining the values of the target function as implied by an error bound on the basis function;

forming a set of constraints on the values of the variables, comprising a constraint corresponding to each input, constraining the values of the target function as implied by the target function having one value per input;

solving an optimization problem that is a linear program or an integer linear program over the set of variables under the set of constraints, with the solution indicating target function values or distributions of target function values on the inputs that maximize the error of the hypothesis function;

computing the hypothesis function error bound implied by the solution to the optimization problem;

and storing the result.

9. (New) A program, stored on a computer, that when operated on a computer produces an error bound for a hypothesis function through steps comprising:

forming a set of variables comprising a variable corresponding to each combination of an input in a set of inputs and a partition in a partitioning of the range of a target function on the input;

forming a set of constraints on the values of the variables, comprising a constraint corresponding to each basis function in a set of basis functions, constraining the values of the target function as implied by an error bound on the basis function;

forming a set of constraints on the values of the variables, comprising a constraint corresponding to each input, constraining the values of the target function as implied by the target function having one value per input;

solving an optimization problem that is a linear program or an integer linear program over the set of variables under the set of constraints, with the solution indicating target function values or distributions of target function values on the inputs that maximize the error of the hypothesis function;

computing the hypothesis function error bound implied by the solution to the optimization problem;

and storing the result.